

REMARKS

Claims 1-30 are pending in this application. Claims 1-17 and 24-30 have been allowed. Claims 18-23 have been rejected.

The office action also objects to the figures, primarily Fig. 6C, because it uses reference numerals 16', 17' and 23' without mentioning these reference numerals in the specification. While these reference numerals are clearly referenced with respect to Fig. 6A (without the apostrophe symbol), applicants have chosen to delete these reference numerals from Fig. 6C. Applicants have also added reference numeral 12' to Fig. 6C to make Fig. 6C consistent with the specification as filed. No amendments are made to the specification and a revised Fig. 6C is submitted with an accompanying Request for Approval of Drawing Changes. No new matter is added thereby.

Next, the office action rejects claims 18-23 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,515,464 ("Sheem"). In response, claim 18 has been amended to traverse this rejection and applicants further respectfully submit that claim 18 as filed is clearly allowable over Sheem.

Specifically, the Patent Office relies upon Figs. 14-25 of Sheem which disclose a tapered waveguide disposed within a tapered channel or trench in a substrate 31. Nowhere in Sheem does it teach or suggest how to fabricate the tapered trench except for the bald statement at column 7, lines 36-38:

The most of the tapering and enlargement is achieved by the channel waveguide 29, which can be precisely designed and fabricated.

While Sheem clearly does not teach or suggest the reactive ion etching (RIE) processes of the present application, the primary difference between Sheem and claim 18 is that Sheem provides the tapered trench in a substrate 31. Sheem does not teach or suggest how to create a tapered trench within a cladding layer. In fact, Sheem does not teach or suggest how to create a tapered trench in a substrate layer. Nevertheless, Sheem in no way teaches or suggests a lower cladding layer with a tapered trench structure as recited in claim 18, a core disposed within that tapered trench structure and an upper cladding layer covering the tapered core, which can serve as a waveguide.

The Patent Office admits that Sheem does not teach or suggest a lower cladding layer that is a separate component from the substrate but adding a cladding layer on top of Sheem's substrate would be obvious to one skilled in the art.

This argument misses the point because Sheem does not teach or suggest how to create the three-dimensional tapered trench structure in a lower cladding layer. In fact, Sheem does not teach or suggest how to create the claimed trench structure in either a cladding layer or a substrate and therefore Sheem cannot render claim 18 obvious because Sheem does not enable one skilled in the art to make the claimed tapered trench in a cladding layer or the claimed tapered core in a tapered trench that is disposed within a cladding layer. Beckman Inst., Inc. v. LKB Produkter AB, 13 U.S.P.Q.2d 1301, 1304 (Fed. Circ. 1989).

No prior art reference teaches or suggests how to create the tapered trench structure recited in claim 18, or the allowed method claims and therefore it simply cannot be obvious to those skilled in the art how to create a tapered trench structure in a cladding layer. Before the novel dual reactive ion etching process disclosed in the present application, applicants respectfully submit that such a trench structure in a lower cladding layer could not be easily and reliably manufactured.

Accordingly, applicants respectfully submit that Sheem can be cited only for the embodiment that it discloses--a tapered trench in a substrate, not a cladding layer. Accordingly, applicants respectfully submit that claim 18 is not anticipated by or rendered obvious by Sheem. Accordingly, applicants respectfully submit that claims 18-23 are allowable over Sheem and an early action indicating that claims 1-30 are all allowable is respectfully solicited.

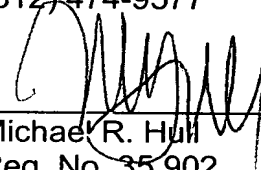
The Commissioner is authorized to charge any fee deficiency required by this paper, or credit any overpayment, to Deposit Account No. 13-2855.

Respectfully submitted,

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By:



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